Objective Force Warrior
and
STRIKE Functional Area

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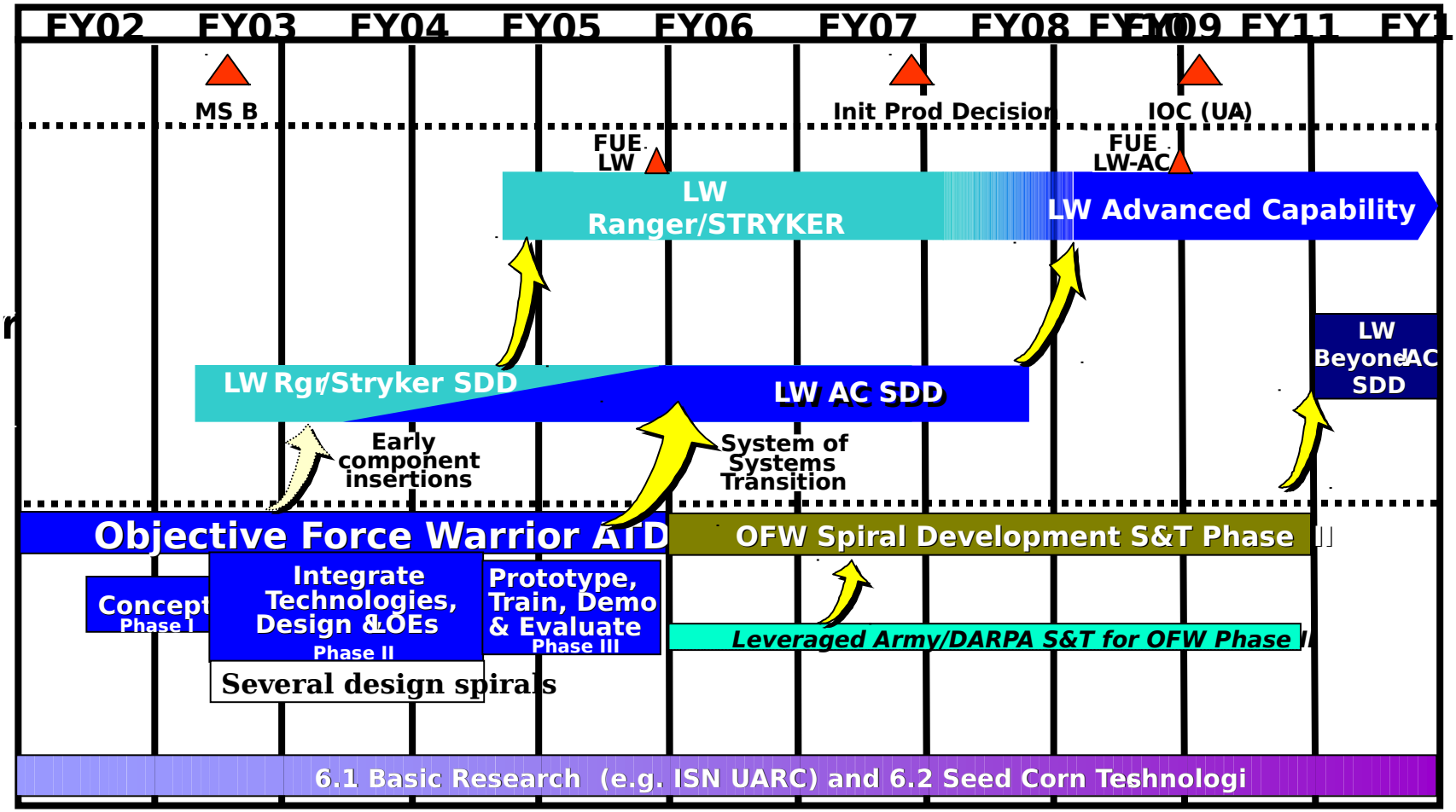
What OFW is

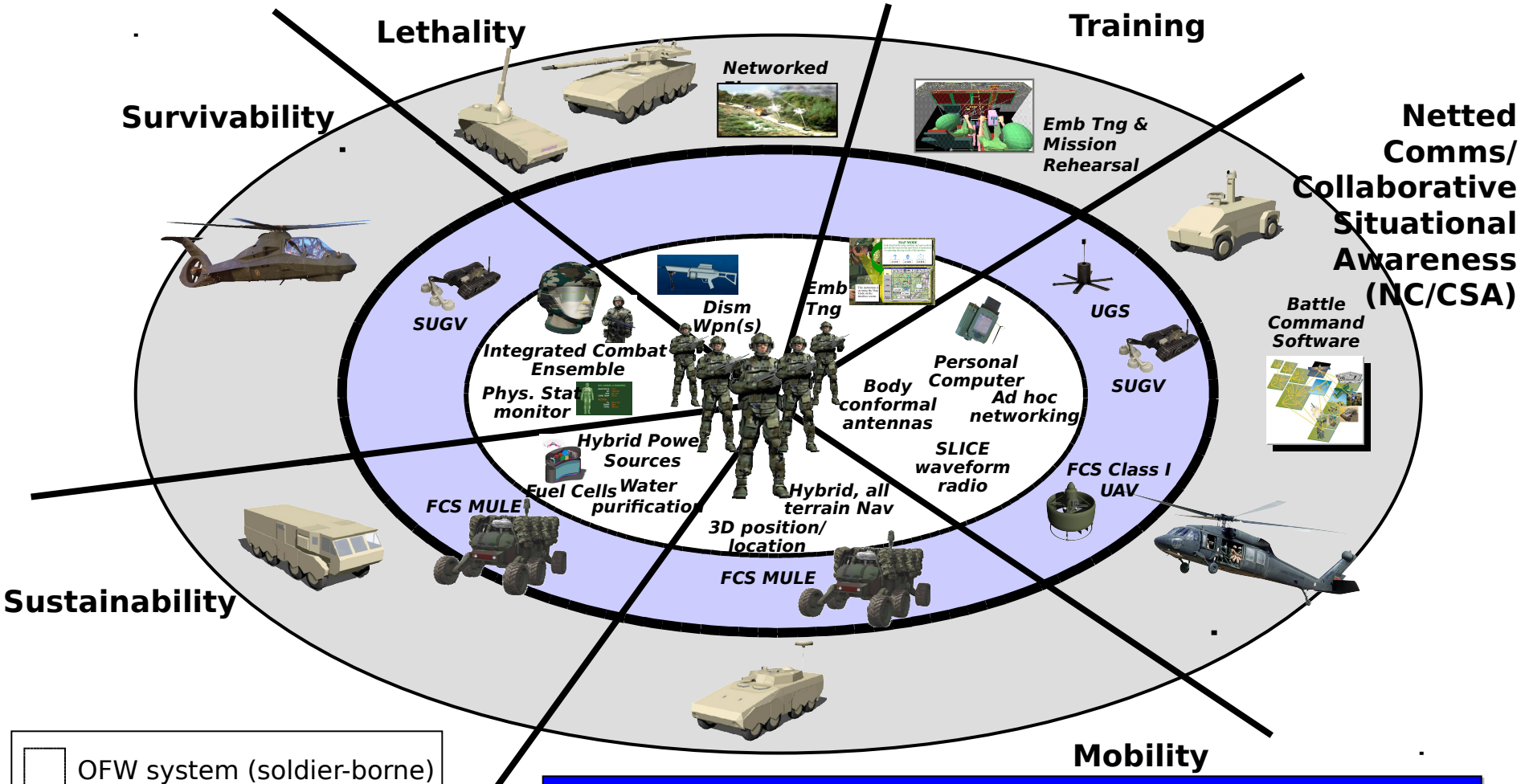
- Purpose:
  - Demonstrate ***revolutionary*** Soldier and Small Teams capability through integrated system of systems approach
    - 50# fighting load (40# objective), 24 hr autonomous operations and FCS/OF connectivity
    - Assist TRADOC in defining the requirements for LW ORD (Block III) in spiral fashion throughout ATD to support transition
- Structure (Other Transaction Authority Agreement):
  - Phase I (AUG 02-APR 03): Two competing Lead Technology Integrators (LTI) develop OFW System of Systems concepts for **all soldiers** in UoA
  - Phase II (JUN 03-JUl 05): Downselected LTI conducts spiral design phase for dismounted system, including "hooks" for other UoA soldiers (NOTE: UFR submitted for other UoA soldiers); early insertion of mature components into LW
  - Phase III (JUl 05-SEP 06): Fabricate ~25 dismounted systems; train EXFOR; Field experiments/demos with OFW System of Systems organized as a squad with platoon headquarters and lateral squad leaders; transition OFW System of Systems (TRL 6) to PM Soldier Warrior
  - Option in OTA agreement to continue into LW-AC SDD at PEO Soldier's discretion

Demonstrating the Soldier System for the Centerpiece of the Objective Force

S&T and Acquisition Roadmap



OFW SoS *Concept* within the Unit of Action



OFW system (soldier-borne)

OFW system of systems

FCS-equipped Unit of Action

Unmanned systems are an integral part of th OFW System of Systems *concept*

OFW Imperatives

- Integrated C4ISR and Netted Fires for small team with real time linkages to UofA and Joint networks
- 24 hour autonomous mission duration capability for small team ops
- Weight reduction to 50 pounds average fighting load per soldier
- Deliberate and iterative development of small team requirements based on sound analysis, technology exploration, experimentation and assessment with users in relevant operational environments. End state = approved ORD prior to ATD completion.

Soldier-borne Power Sources

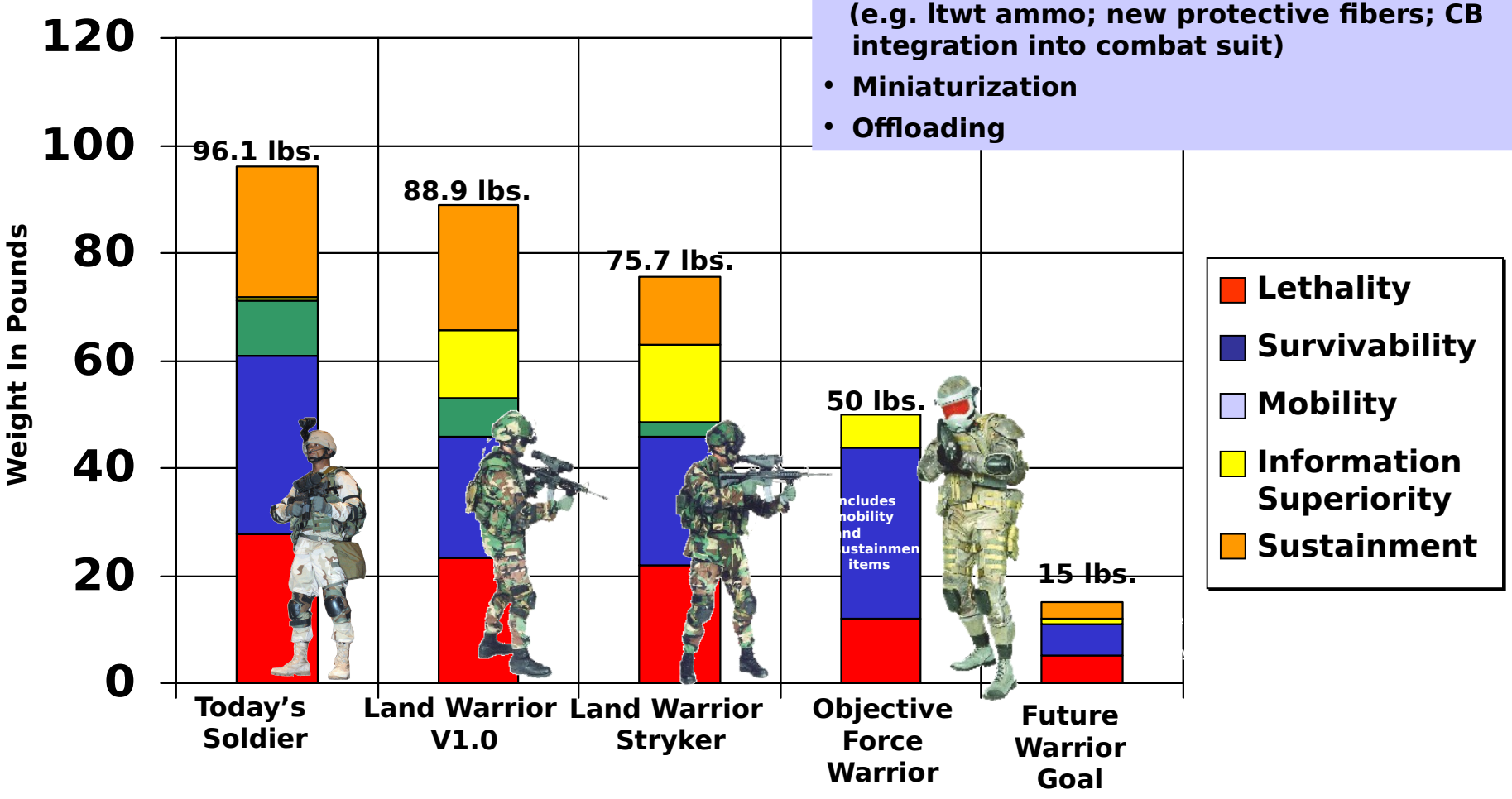
Power Source Alternatives	LW 16 Watt avg. power		OFW 12 Watt avg. power		ENABLERS: Low Power Design, Power Management
	24 hrs.	72 hrs.	24 hrs.	72 hrs.	
Disposable Batteries	**5 lb**	**15 lb**	**---**		**---**
Rechargeable Batteries (135 Wh/kg for LW)	**6 lb**	**19 lb**	**3 lb**	**10 lb**	**Li-Ion Polymer (160 Wh/kg), or Li-Ion Metal Rechargeable Cells (225 Wh/kg, 10x reduction in rechg time),**
Metal Air Hybrid System	**5 lb**	**10 lb**	**2 lb**	**6 lb**	**Same Rechargeable Cells plus Zn- or Al-Air Primary Cell (300-500 Wh/kg)**
Fuel Cell Hybrid System	**---**		**3 lb**	**4 lb**	**Same Rechargeable Cells plus Direct Methanol Fuel Cell (400-800 Wh/kg)**

Power for Integrated C4ISR, Sensor Fusion, & Training with ≥ 50% Weight Reduction

Evolution of Soldier-borne Load

Enabling Technology:

- **Lightweight, multifunctional materials (e.g. ltwt ammo; new protective fibers; CB integration into combat suit)**
- **Miniaturization**
- **Offloading**



OFW/FCS Connectivity

FCS Domain

Publish / Subscribe Model e.g., Internet

e.g., Windows NT Server Environment

FCS LSI Software Functionality

Interface Control Document (ICD)

Application Program Interfaces

"Handshake"

Push / Pull Data

Developed Collaboratively via the SS / FCS Interface Control Working Group (ICWG)

OFW LTI Software Functionality

Warfighter Machine Interface

Soldier System Management

Situational Awareness & Understanding

Sustainment & Medical Management

Embedded Training & Rehearsal

Communications & Networking

Small Unit Battle Management/C2

Information Assurance

Information Management

e.g., Windows CE Environment

OFW Domain

(Size, Weight And Power (SWAP) Constraints)

SS-FCS ICWG Organization

AAE

PEO Soldier | **HQ TRADOC DCSDEV** | **PEO GCS**

Charter - PEO Soldier, HQ TRADOC and PEO GCS

Resource Library - AKO

Specs
ICDs
ORDs
Etc.

Rqmts Integ WG

Rqmt Gaps

ORD changes

Applicable
- Combat Arms Centers
- Combat Arms Spt Centers

Overarching ICWG
Core Members (O-6 level Reps)
- PEO Soldier
- HQ TRADOC
- PM FCS
- LSI

Supporting Members
- USAIC
- UAMBL
- Other TRADOC Agencies
- Applicable PMs
- OFW — Carol Fitzgerald, Pri; John Munroe, Alt
- PM OF
- OFTF
- Contractors (LSI, LTI, LW, etc.)

Advisors
- Working Group Co-Leads/SIA Leads

OICWG convenes every 2-3 months and is responsible for:
- ICD & architecture approval (core members votes provide final approval)
- Recommending requirement changes to the RIWG
- Conflict resolution

Soldier System-FCS IPT Alignment
- FCS Training IPT
- FCS Architecture WG
- FCS IS&T IPT
- FCS Supportability IPT
- FCS C4ISR
- FCS Combat Systems
- FCS Human Dim
- FCS SSEI
- FCS Lethality

OFW IPT Membership on Page 2

PEO Soldier and PM FCS/LSI Co-Leads (O-5 level) Systems Integration/ Architecture (SIA) Working Group

Andy Taylor, Pri
Dave Goodman, Alt

SIA WG is responsible for:
- Integration across all WGs
- ICD management
- Soldier-FCS architectures
- Reporting to OICWG every 2-3 months

WGs convene as required and WG leads report back to SIA WG as required. WG co-leads are members of SIA WG

PEO Soldier and PM FCS/LSI Co-Leads (O-5 level)
Unmanned Systems Development Working Group (includes OCI)

Ty Stark, Pri
Bob Dirsa, Alt

PEO Soldier and PM FCS/LSI Co-Leads (O-5 level)
C4ISR Working Group

Shamoli Patel, Pri
Danielle Koukos, Alt
Bob Dirsa, Alt

Align with FCS/WIN-T/JTRS ICWG

PEO Soldier and PM FCS/LSI Co-Leads (O-5 level)
FCS Platform Integration Working Group

Aric Sherwood, Pri
Bob Dirsa, Alt

Sensors

John Edwards, Pri
Darren Ward, Alt

Weapons

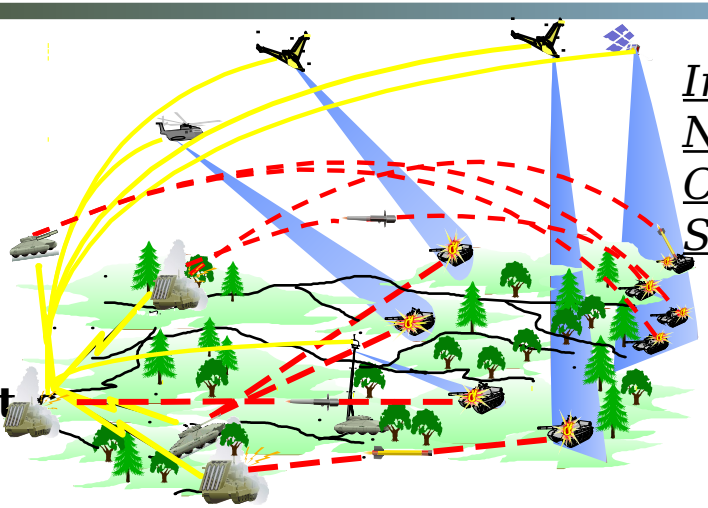
Equipment, etc.

Cheryl Stewardson, Pri
Matt Correa, Alt

Facilitating Collaboration for Objective Force

- Soldier system/FCS interface control working group (ICWG)
- Requirements integration working group (USAIS/UAMBL)
- Cross-membership on program IPTs
- Associate contractor agreement between OFW LTI and FCS LSI after downselect to achieve collaborative association
  - ACAs with other key efforts (e.g., SLICE)
- FCS LSI soldier system integration cell
  - Linked to SS/FCS ICWG

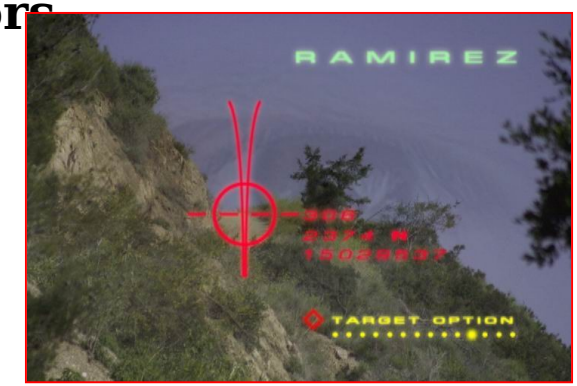
STRIKE - Precision/Massed Fires



Interface within OFW Netted Comms/Collaborative Situational Awareness

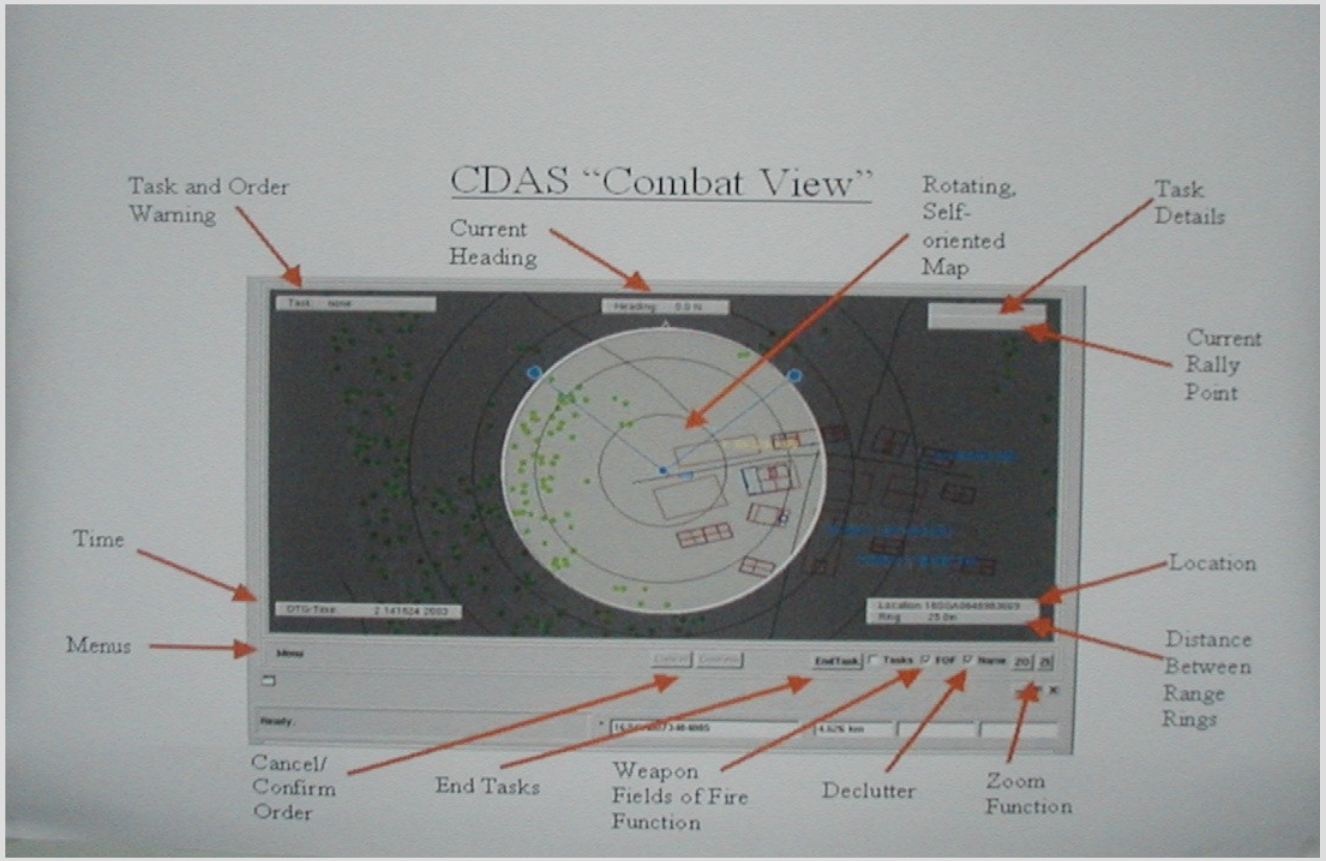
- **Netted Fires**
  - **Sychn/coord fires**
  - **Modeling and Simulat**
- **Organic Weapons**
  - **Lightweight Machinegun**
  - **XM29 Blocked interfac**
  - **XM8 carbine interface**
  - **XM307 interface**
  - **Non-Lethal Munitions**
- **Organic Weapon Sensors**
  - **Combat ID**
  - **Fire Control**
  - **Sensor Applications**
    - **LRF and Lasers**
    - **FLIR**
    - **CVAM**

OCSW System



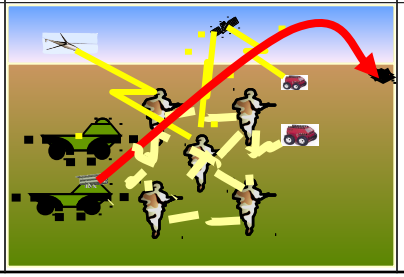
Leverage opportunity of best OFW Sensors and Display for specific STRIKE applications

OFW Netted Fires Experiment Display View



Feb 03 @ Dismounted Battlespace Battlelab, Ft. Benning, GA

Targeted Technology STRIKE

Tech Effort	TRL		Description
Lightweight Family of Weapons and Ammunition	TRL4 FY03		• Effort to reduce weight of weapons and ammunition 20-40% • Concurrent effort to reduce weight of 5.56mm ammunition for current weapons • Assess technologies & identify barriers • Alternate case / Caseless assessment • Identify leading candidate concepts • Contractual action for FY03
Integrated Dynamic Model of Weapon	TRL3 FY03		• Weapon chamber/cartridge model • Potential growth to Simulated weapon • Model hierarchy consideration up front
Squad Level Netted Fire	TRL 4 FY03		• Demo components integrating 1. Share friendly/threat information 2. Execute synch/coordin attack from organic sensors

OFW Strike STO leverage

STO(p) ARD-06 Lightweight Machine Gun and Ammunition

- FY06 (TRL 5) System will participate in the Objective Force Warrior
Demonstration as non-firing protoptypes

- FY07 (TRL6) System testing will be conducted to assess accuracy,
lethality and reliability

- Deliverables per OFW Strike roadmap are
    - Up to 20 Weapons
    - 20,000 rounds of ammunition (not safety certified)

OFW Early Component Transition Process

OFW ATD

Phase I

Phase II/III

Area Leaders identify candidate components

Crosswalk with LTI technology risk assessment

Develop early component transition watch list

OFW and associated programs (e.g. SLICE, LW SAW, etc.)

Materiel developer (e.g. PM SW, PM SWpn, PM SEq)

Conduct assessment

Observe assessment

Joint TRL assessment

Maintain on watchlist?

Yes

No

TRL =

5-9

1-4

IRL assessment

Maintain on watchlist?

Yes

No

IRL =

4-5

1-3

Option on OTA for additional components

Purchase components

Continue to develop as part of system of systems transition

ID candidates annually in early spring to influence POM submissions

Land Warrior System Roadmap

FY00

Version 0.6

FY05

Stryker Interoperable and Ranger

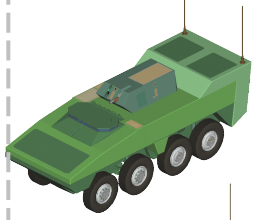
Commanders Digital Assistant

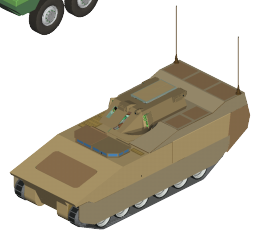
Mounted Warrior

- Stryker Integration
- Tactical Internet Connectivity
- Vehicle-based Battery Recharging

FY08

FCS Interoperability





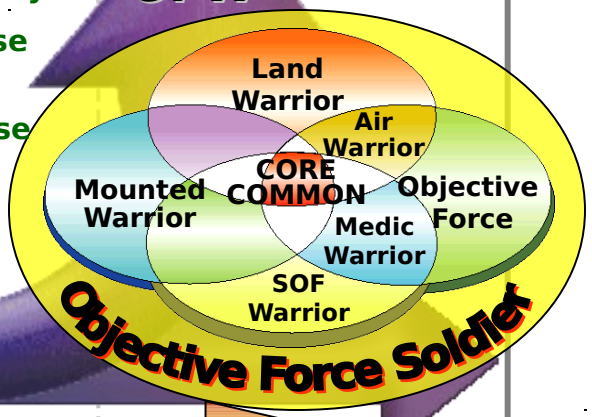
- FCS Compatibility
- Mission Increase (24 hours)
- Weight Decrease (10%)

FY11-2014

Advanced Capability Improvement

- Objective Force Compatibility
- 50# Fighting Load
- For All UoA Soldiers

OFW



Science & Technology

Acquisition Program Metrics

Evolutionary Acquisition Approach with Revolutionary Technology